Transport Infrastructure Investments as Means to Cope with Major Financial Crises

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This presentation is made for trial lecture (as a part of PhD defense) at Molde University, College.

Agenda

- Economic Crisis.
- Transport Infrastructure (definition).
- Importance of transport infrastructure investments for an economy.
- Transport Infrastructure investment as a tool of recovery from economic recessions.
- Current state of transport infrastructure in developing economies.
- Global Infrastructure Initiative.
- Conclusion

Economic Crisis

- Downturn in economy – depression – recession – crisis – panics

> *"major downswing in the business cycle that is characterized by sharply* ***reduced industrial production***, ***widespread unemployment***, ***serious declines or cessations of growth in construction activity***, *and* ***great reductions in international trade*** *and capital movements" (Britannica)*

- History of Economic Crisis goes back even to 3rd century
  - Imperial Crisis (AD 235-284) almost led to collapse of Roman Empire
  - Tulip Mania (1630s)
  - Great Depression of 1930s
  - German Hyperinflation (1918-1924)
  - Black Monday (1987)
  - East Asian Financial Crisis (1997)
  - Great Recession (2010 --)

Transport Infrastructure

- Transportation ….
  - Is a means of conveyance.
  - Includes shipping of goods
  - Includes movement of energy
  - Includes pipelines
  - Refers to flow of people and goods
  - Includes many more (aircrafts, highways, trams etc.)

"Transportation-related infrastructure—roads, bridges, tunnels, railways, canals, seaports, and airports—is such a fundamental cornerstone of the modern economy that we hardly think of the central role it plays in our global society" (The Handbook of Infrastructure investing 2010)

"Transport Infrastructure includes dams and water supply (Rahall Appalachian Transportation Inst. of Marshall University).

"Transport Infrastructure includes walking trails" (Alaska Department of Transportation and Public Facilities Planning)

NASA used to include "space program" in transport infrastructure.


Electric trams on St Patrick's


Siemens Press Picture


9N-ABX
Royal Nepal Airlines


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PR

Transport Infrastructure Inverstment and Economic Crisis

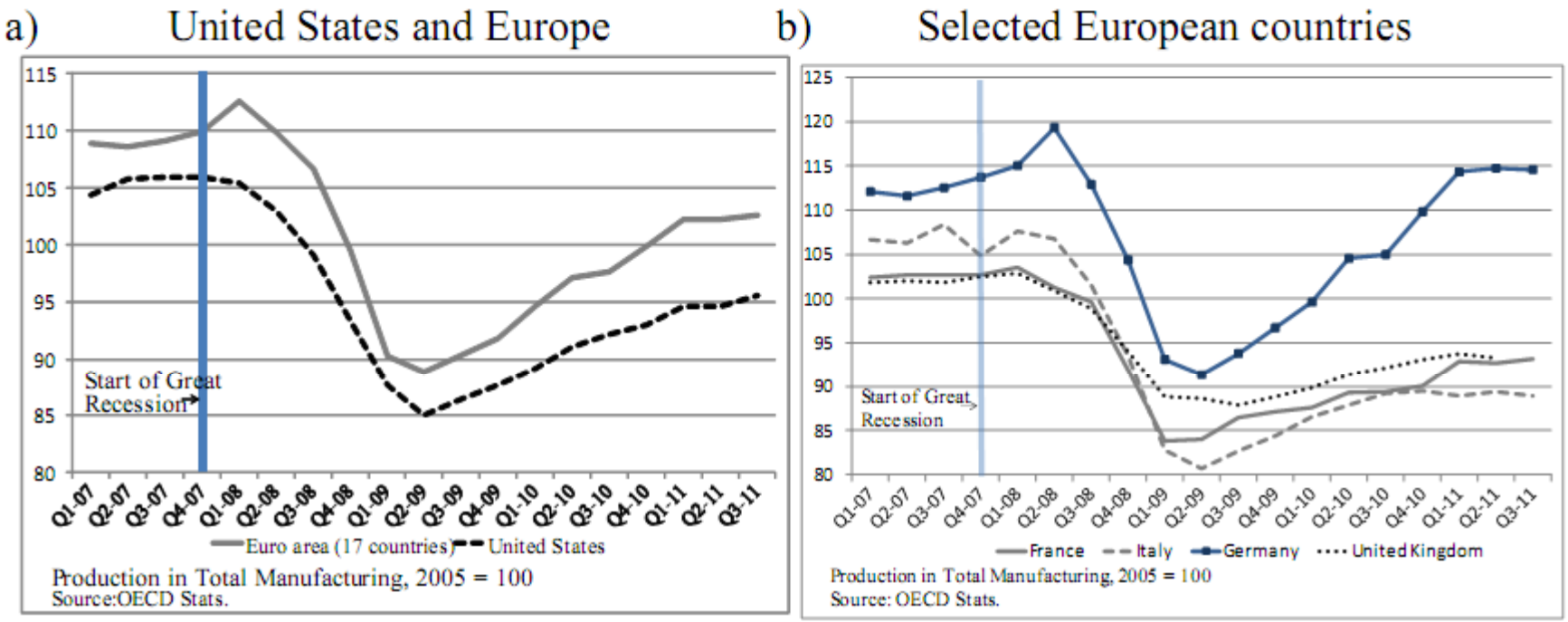
- **Why** transport infrastructure is important for an economy?
- **How** this investment in Transport Infrastructure can be made?
- **When** it is appropriate to invest in transport infrastructure?
- **What** kind of transport infrastructure investment are considered important for an economy?

A Historical Perspective

- Great Depression of 1930s
  - Federal Relief Appropriation Act 1935
  - Works Progress Administration (WPA)1935 and Public Works Administration (PWA)
    - Massive investment in public infrastructure projects e.g. dams, roads, bridges, excavation, parks etc
      - 11428 road projects – 33% of total projects – 15% of budget
      - For every 1 PWA worker employed, 2 additional workers were employed indirectly.
      - 3.3 million unemployed people got jobs through WPA
        - » La Guardia Airport
        - » Triborough Bridge (JFK bridge in New York)
        - » Lincoln Tunnel – Blue Ridge Parkway

Recent Financial Crisis

Manufacturing production in the United States and Europe

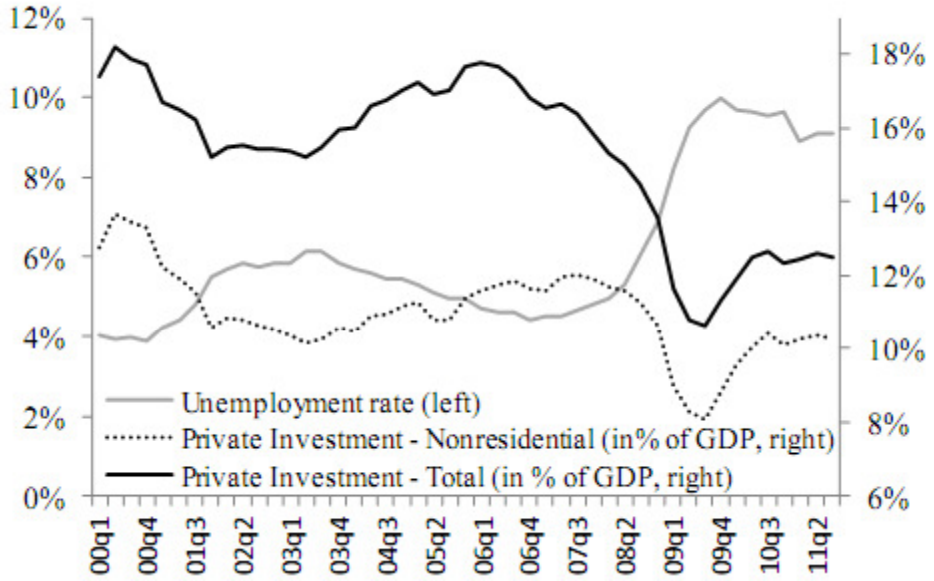


Source: World Bank 2012

Recent Financial Crisis (contd..)

Private Investment and Unemployment

a) United States



b) European Union

Source: World Bank 2012

- High Unemployment (US unemployment aid increased to 0.24 to 1% of GDP from 2007 to 2009
- In Spain (15.1% in 2008 to 18.1% in 2010)
- High Unemployment -- low household income -- weakened demand -- eroding tax base

Finding a Balanced Solution

- Not a straight forward answer.
- As the growth outlook of advanced economies has weakened , a strong growth is required to overcome unemployment and debt issues.
- Private investment is likely to remain subdued (high investment risk)
- Household consumption is likely to stay depressed (high unemployment)
- So the next important Question is:
  - What can governments do to enhance growth without adding to high debt levels?

Policy Options

- Monetary Policy
  - Monetary Policy has limited traction if countries are in 'liquidity trap' i.e. aggregate demand falls short of productive capacity.
  - Monetary expansions work mainly through affecting inflationary expectations
  - Fear of inflation ---- tighten monetary policy
- Structural Reforms
  - Removing barriers to investment , competition, job creation --- little impact
  - Protection to the most affected industries.
- Austerity Measures
  - May worsen the employment situation
- Fiscal Consolidation
  - May depress growth
  - 1 % GDP of fiscal consolidation reduces real private consumption over the next two years by 0.75% while real GDP declines by 0.62% (Guajardo, Leigh and Pescatori 2011)
- Increasing Government Spending.
  - Keynesianism
  - Could raise demand and reduce unemployment
  - Given the high debts the increase in government spending have to be compensated by increased revenue.
  - Investment in projects with higher growth Impact

Importance of Transport Infrastructure in an Economy?

- Direct and Indirect Impacts
    - On site employment as well as in tangential industries
    - In US 18,000 new estimated jobs with every USD 1 billion investment in infrastructure - 40% of these jobs in construction (world bank 2012)
- Manufacturing Jobs are important for sustaining a strong middle class.
- Significant infrastructure gap in some advanced economies.
    - EU needs USD 2.1-2.8 trillion to be invested in infrastructure during next decade (European Commission 2011)
    - US requires USD 2.2 trillion of infrastructure spending during next decade (The American Society of Civil Engineers 2009)

Examples from Literature

- Strong empirical evidence that infrastructure investment enhances economic growth.
  - Romp and de Han (2005)
    - In general an elasticity of output with respect to public capital in the order 0.1-0.2 in high income countries
  - Lighthart and Martin Suarez (2011)
    - Estimated elasticity is 0.14 in a meta-analysis of 49 studies in OECD countries
- Empirical evidence on fiscal multipliers with an investment focus is mixed.
- Most studies ignore the state of the economy i.e. either recession or boom. This can lead to very different results. (Parker 2011)
- Auerbach and Gorodnichenko (2010)
    - Cumulative impact of multiplier over five years is higher during the recession (1.0 - 1.5) as compared to boom (0.0-0.5)
- Fishback and Kachanovskaya (2010)
    - Estimates the multiplier effects of different type of government spending and find the public works has the highest multiplier of 1.7

Infrastructure Investments in High Debts

Doing more with less

1. Identification of bottleneck releasing infrastructure projects with maximum economic output.
   - Japan's lost decade after 1990 crisis
   - A tough choice between speedy disbursements of funds and more medium term investment horizon

2. Projects that can earn revenue:
   - Bridges , toll roads etc

3. Innovative financing mechanism.
   - To give incentives to private sector.
   - National Infrastructure Reinvestment Bank in US

Issues related to Transport Infrastructure Investment

- Identification of causation.
- Accurate timing of government's policy response.
  - Governments may not be able to respond to the crisis quickly.
- Transport needs are mostly anticipated.
  - The planning for future projects is a long process

Effectiveness of Transport Infrastructure Investments

- Does it translate quickly into higher employment and economic activity or does it impact economy only slowly over time or neither?
  - Transport spending could offer a potent way to stimulate economic growth.
- Can highway projects be a way out of economic recession?
  - Implementation delays due to planning, design, analysis etc
- What about the "Shovel – ready" projects?
  - Maintenance / repair of existing projects
  - Projects that are already under way.

Short and Long run Impacts of TI

- Short run impacts
  - Increase in Employment and Output.
    - A dollar spent on infrastructure construction produces roughly the double the initial spending in ultimate economic output. (AED 2012)
    - The biggest effect of infrastructure spending occur in the manufacturing and service sector
- Long run impacts
  - Productivity – efficiency
  - Agglomeration Economies
  - Health and Education
  - Not just an improvement in Quality of Roads but Significant economic returns for other sectors of economy
    - Over 20 years, investing One USD in highways and returns approximately 0.35 USD in tax revenues.

Growth Through Infrastructure: A view from the developing world.

- Infrastructure shortfalls in the developing world are pervasive.
  - 1 billion rural dwellers are estimated to have no access to all weather roads within 2 KM (International Road Federation 2010)
  - Lowest road density in Sub Sahara Africa resulting around 16% of indirect cost as transportation cost.
- Inadequate infrastructure leads to less competitive firms due to low productivity.
  - Low quality of product as well as life
  - Many businesses do not start
- On the other hand rapid increase in population – high demand for infrastructure.

Empirical Studies

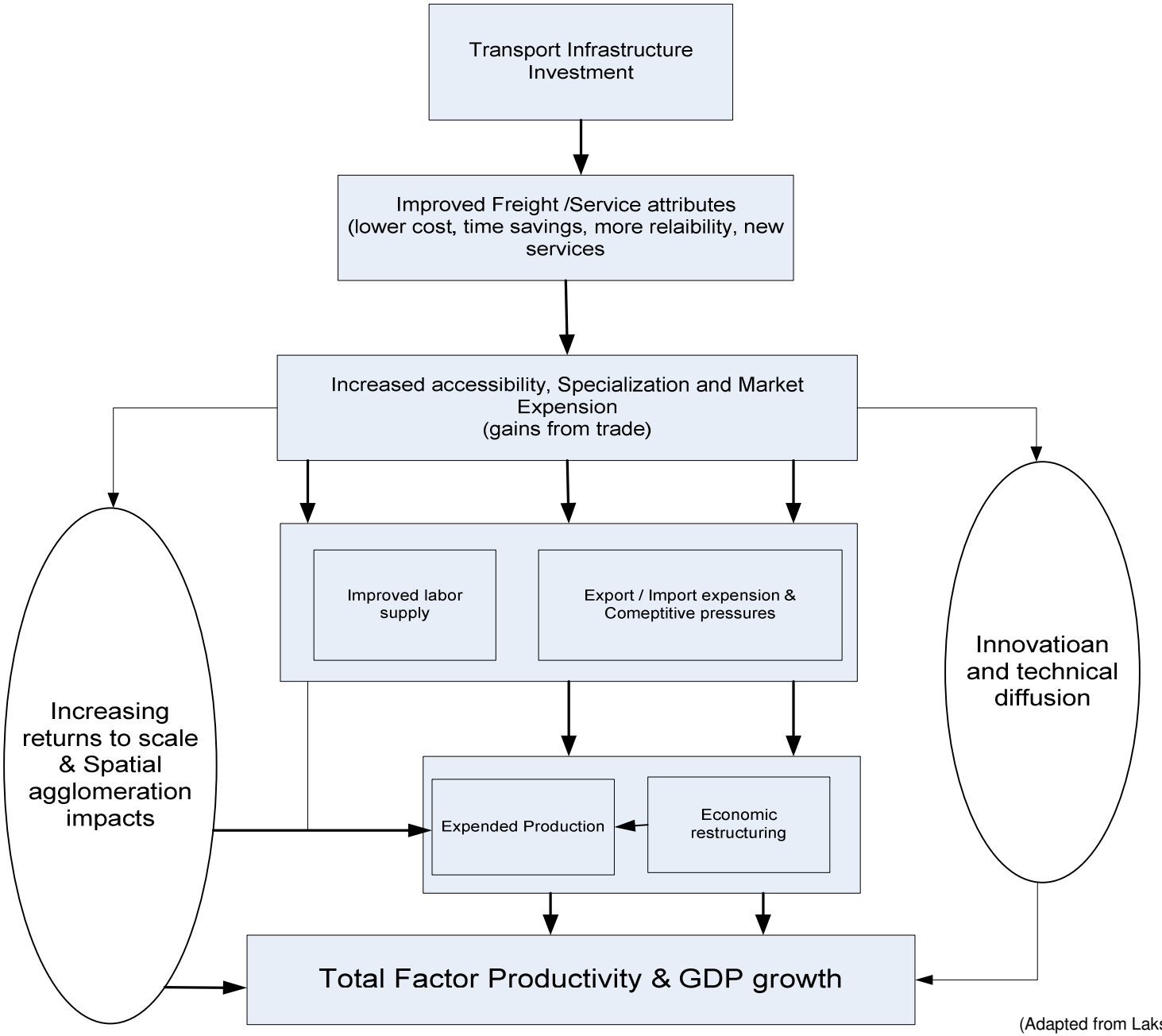
- Calderon and Serven (2010) estimated that annual growth among developing countries due to investment in infrastructure increased on average by 1.6% between 1991-95 and 2001-05.
    - Particularly large impact in South Asia where it reached to 2.5%
    - If each Latin American country could match the average level of infrastructure among non-Latin American middle income country, growth in Latin American country would increase by 2 percentage points per year.

- Diechmann, Fingleton and Shi (2010) shows that aggregate Chinese real income was approx. 6 times higher than it would have been in 2007 if the express network way had not been built
    - China spent USD600 billion on roads between 1990 and 2005
    - National Expressway is 41000 KM long road network connecting all major cities with more than 200,000 population.

- Sahoo, Dash and Nataraj (2010) estimate that the output elasticity of infrastructure investment in China is around 0.2 to 0.41 percent.
    - The success of China's infrastructure policy lies in the fact that it was embedded in the overall economic policy of Chinese government that focused not only on improving physical infrastructure but also enhancing private sector and human capital formation.

Global Infrastructure Initiative

- For the benefit of all
- World has become globalized
    - Unrest in one part affects the others.
    - Isolated life is no more possible
- Gap between demand and supply of infrastructure in developing countries.
    - Annual Infrastructure requirement is around USD 1250-1500 billion with financing gap ranges between USD 175-700 billion at constant (Fay *et al* 2011)
- Impact on trade
    - A USD 1 increase in investment in developing countries is associated with USD 0,50 increase in imports. About 70% of traded capital goods from low income countries were sourced from high income countries i.e. USD 0,35 increase in exports from high income countries. This amounts to USD 175 billion increase in exports from high income countries.
- Impact on Employment
    - 1.1 – 2,9 million more jobs can be created in advanced countries by bridging the finance gap in developing countries.



(Adapted from Lakshmanan 2010)

Conclusions

- Transport infrastructure is not just a byproduct of growth.
- Investment in transport infrastructure may not be able to solve the problem alone.
- Careful implementation of policies related to transport infrastructure investments.
- An approach beyond traditional Keynesianism (global infrastructure initiative)

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Thank You